THE CLAIMS:

The following listing of the claims replaces all prior versions and listings of the claims in the present application:

1. (original) A magnetic tunnel element, comprising:

a first layer formed from an amorphous material;

an amorphous tunnel barrier layer; and

an interface layer between and in proximity with the first layer and the tunnel barrier layer, the interface layer being formed from at least one material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials, wherein the interface layer material is crystalline when it is in isolation from both the first layer and the tunnel barrier layer.

2. (original) The magnetic tunnel element according to claim 1, wherein the first layer is formed from at least one material selected from the group consisting of amorphous ferromagnetic materials and amorphous ferrimagnetic materials.

3. (original) The magnetic tunnel element according to claim 1, further comprising a second layer in contact with the tunnel barrier layer and including at least one material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials, and

wherein the first layer, the interface layer, the tunnel barrier layer and the second layer form a magnetic tunnel junction.

4. (original) The magnetic tunnel junction according to claim 3, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is greater than 50 %.

5. (original) The magnetic tunnel junction according to claim 3, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is greater than 60 %.

6. (original) The magnetic tunnel junction according to claim 3, wherein the

magnetic tunnel junction has a tunneling magnetoresistance that is greater than 65 %.

7. (original) The magnetic tunnel element according to claim 3, wherein the interface layer is configured to increase the tunneling magnetoresistance of the magnetic tunnel junction.

8. (original) The magnetic tunnel element according to claim 1, further comprising:

a metal-containing layer in contact with the tunnel barrier layer; and

a semiconductor layer that is in contact with the first layer,

wherein the metal-containing layer, the tunnel barrier, the interface layer, the first layer and the semiconductor layer form a magnetic tunneling transistor.

9. (original) The magnetic tunnel element according to claim 1, further comprising a semiconductor material layer in proximity with the tunnel barrier layer,

wherein the semiconductor layer, tunnel barrier layer, the interface layer and the first layer form a spin-injector or detector device.

10. (original) The magnetic tunnel element according to claim 1, wherein the interface layer includes at least one of Fe and an Fe-containing alloy.

11. (original) The magnetic tunnel element according to claim 10, wherein the Fe-containing alloy includes Co.

12. (original) The magnetic tunnel element according to claim 11, wherein the CoFe alloy contains between about 10 atomic percent and 95 atomic percent Fe.

13. (original) The magnetic tunnel element according to claim 10, wherein the Fe-containing alloy includes Ni.

14. (original) The magnetic tunnel element according to claim 10, wherein the Fe-containing alloy is formed from Fe and at least one of Co and Ni.

15. (original) The magnetic tunnel element according to claim 1, wherein the tunnel barrier layer includes an oxide of at least one of Al, Ga and In.

16. (original) The magnetic tunnel element according to claim 1, wherein the first layer includes an alloy of Co, Fe and B.

17. (original) The magnetic tunnel element according to claim 16, wherein the CoFeB alloy is an alloy of the form $(Co_{70}Fe_{30})_{100-x}B_x$.

18. (original) The magnetic tunnel element according to claim 17, wherein x is between about 15 and 20.

19. (original) The magnetic tunnel element according to claim 1, wherein the first layer includes an alloy of Co, Fe, X and Y,

wherein X and Y are independent and chosen from the group consisting of B, Hf, Zr, C, Be, Si, Ge, P and Al.

20. (original) The magnetic tunnel element according to claim 19, wherein at least one of X and Y causes the alloy to be amorphous.

21. (original) The magnetic tunnel element according to claim 1, wherein the first layer includes an alloy of Co, Fe and Zr.

22. (original) The magnetic tunnel element according to claim 1, wherein the

thickness of the interface layer is less than 30 Å.

23. (original) The magnetic tunnel element according to claim 1, wherein the thickness of the interface layer is less than 20 Å.

24. (original) The magnetic tunnel element according to claim 1, wherein the thickness of the interface layer is selected so that the interface layer is amorphous.

25. (original) A magnetic tunnel element, comprising:

a first layer formed from an amorphous material;

an amorphous tunnel barrier layer; and

an interface layer between and in proximity with the first layer and the tunnel barrier layer, the interface layer being formed from at least one material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials, wherein the interface layer material is crystalline when it is in isolation from both the first layer and the tunnel barrier layer, the thickness of the interface layer being selected so that the interface layer is not crystalline.

26. (original) The magnetic tunnel element according to claim 25, wherein the first layer is formed from at least one material selected from the group consisting of amorphous ferromagnetic materials and amorphous ferrimagnetic materials.

27. (original) A memory device, comprising:

a first plurality of conductive lines;

a second plurality of conductive lines overlapping the first plurality of conductive lines at a plurality of intersecting regions; and

a plurality of nonvolatile memory cells formed at respective intersecting regions, at least one nonvolatile memory cell including a magnetic tunnel element comprising a first layer formed from an amorphous material, an amorphous tunnel barrier layer, and an interface layer

between the first layer and the tunnel barrier layer, wherein the interface layer is formed from at least one material that is crystalline when the material is in isolation from both the first layer and the tunnel barrier layer, and wherein the interface layer is formed from a material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials.

28. (original) The memory device according to claim 27, wherein the first layer is formed from at least one material selected from the group consisting of amorphous ferromagnetic materials and amorphous ferrimagnetic materials.

29. (original) The memory device according to claim 28, wherein the magnetic tunnel element further includes a second layer in contact with the tunnel barrier layer and formed from at least one material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials, and

wherein the first layer, the interface layer, the tunnel barrier layer and the second layer form a magnetic tunnel junction.

30. (original) The memory device according to claim 29, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is greater than 50 %.

31. (original) The memory device according to claim 29, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is greater than 60 %.

32. (original) The memory device according to claim 29, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is about 65 %.

33. (original) The memory device according to claim 27, wherein the thickness of the interface layer is less than 30 Å.

34. (original) The memory device according to claim 27, wherein the thickness of the interface layer is less than 20 Å.

35. (original) The memory device according to claim 27, wherein the thickness of the interface layer is selected so that the interface layer is amorphous.

36. (withdrawn) A method for forming a magnetic tunnel element, comprising:

forming an amorphous tunnel barrier layer; and

forming an interface layer on the tunnel barrier layer, the interface layer being formed from a material that is crystalline when the material is in isolation from the tunnel barrier layer.

37. (withdrawn) The method according to claim 36, wherein the interface layer has a thickness selected so that it is amorphous.

38. (withdrawn) The method according to claim 36, wherein forming the interface layer includes rapidly quenching the interface layer to make the interface layer amorphous.

39. (withdrawn) The method according to claim 36, wherein forming the interface layer includes depositing the interface layer on the tunnel barrier layer at a cryogenic temperature, the interface layer including at least one of a ferromagnetic film and a ferrimagnetic film.

40. (withdrawn) The method according to claim 36, further comprising bombarding the interface layer with energetic ions after the interface layer has been formed on the tunnel barrier layer, the interface layer including at least one of a ferromagnetic film and a ferrimagnetic film.

41. (withdrawn) The method according to claim 36, wherein the interface layer is formed from at least one material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials.

42. (withdrawn) The method according to claim 36, further comprising forming a first layer on the interface layer, the first layer being formed from an amorphous material.

43. (withdrawn) The method according to claim 41, wherein the interface layer is formed from a material that is crystalline when it is in isolation from both the tunnel barrier layer and the first layer.

44. (withdrawn) The method according to claim 41, wherein the first layer is formed from at least one material selected from the group consisting of amorphous ferromagnetic materials and amorphous ferrimagnetic materials.

45. (withdrawn) The method according to claim 41, further comprising forming a second layer in contact with the tunnel barrier layer, the second layer including at least one material selected from the group consisting of ferromagnetic materials and ferrimagnetic materials, and

wherein the first layer, the interface layer, the tunnel barrier layer, and the second layer form a magnetic tunnel junction.

46. (withdrawn) The method according to claim 45, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is greater than 50 %.

47. (withdrawn) The method according to claim 45, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is greater than 60 %.

48. (withdrawn) The method according to claim 45, wherein the magnetic tunnel junction has a tunneling magnetoresistance that is greater than 65 %.

49. (withdrawn) The method according to claim 42, further comprising:

forming a metal-containing layer in contact with the tunnel barrier layer; and

forming a semiconductor layer that is in contact with the first layer,

wherein the metal-containing layer, the tunnel barrier, the interface layer, the first layer and the semiconductor layer form a magnetic tunneling transistor.

50. (withdrawn) The method according to claim 42, further comprising forming a semiconductor material layer in proximity with the tunnel barrier layer,

wherein the semiconductor layer, tunnel barrier layer, the interface layer and the first layer form a device that can be used for at least one of spin injection and spin detection.